REMARKS/ARGUMENTS

Applicant gratefully acknowledges the thorough Examination to date and has made an effort to fully respond to all the issues raised by the Examiner. Reconsideration of the application in view of the following remarks is respectfully requested.

Applicant has previously amended the Abstract to conform with the amendments made to the Specification and Claims. The remarks presented below by Applicant detail specific paragraphs and lines in the original Specification where support can be found for entry of each of the amendments into the Specification provided in Applicant's response of July 11, 2005 which also support the entry of amendments into the Abstract. Therefore, no new matter has been introduced in the Abstract.

Amendment Objection under 35 USC 132

Applicant previously amended the Specification at paragraphs [0011], [0032], and [0043], to more clearly define terminology used in the original Specification, i.e., discrete sensors, detection zones, and detection fields. As is well known in the prior art, discrete sensors can be classified as either volumetric or non-volumetric.

At paragraph [0011], Applicant further amended the Specification to more clearly define the present invention and provide support for the Claims as amended. In an effort to provide basis for entry of the amendment, Applicant submits the following to clearly show basis for entry of amendments entered on March 24, 2005 detailed below and underlined with a single underline, and for entry of current amendments detailed below and underlined with a double underline.

Applicant has amended the following text in paragraph [0011]:

"The present invention relates to a sensor array for an intrusion detection system. According to the present invention, the sensor array includes at least two sensor nodes,"

Applicant submits that the basis for entry of the amendment to the original Specification is that "at least two" sensor nodes are clearly shown in Figures 1, 2, and 3, and taught in paragraph [00031] which reads "Each of the discrete sensor nodes 10a, 10b,...,10n is separated by a prescribed distance to provide an abutting or overlapping detection field detection field with an adjacent sensor node and may contain one or more discrete sensors." In addition, the phrase "at least two" narrows the scope of the invention.

"a corresponding node processor at each sensor node,"

The inclusion of a "corresponding node processor" at each sensor node is clearly shown in Figure 1 and taught at paragraph [0033], "each sensor node 10a, 10b, ..., 10n, may also contain a node processor 25a, 25b, ..., 25n." Applicant has now narrowed Claim 1 to include a "node processor" at each sensor node.

"and a deformable cable. Each sensor node includes one or more discrete sensors,"

Applicant submits that the inclusion of "a deformable cable" is also clearly supported by the specification at paragraph [0012] which reads: "Depending on the array mounting...the sensor nodes may be integrated and fabricated as custom microchips, each of which may be encased within and spaced apart along a flat deformable cable or tape."

"which are classified as volumetric sensors or non-volumetric sensors."

Applicant submits that the basis for entry of the previous amendment in the original Specification is that Figure 6 clearly shows a trough-shaped detection zone 65 above the sensor node, such that the presence of an object that passes through the detection zone 65 is detected, as detailed in corresponding paragraph [0050]. The detection zone 65 is not two-dimensional but rather is three-dimensional and thus volumetric in shape. Paragraph [0043] also discusses "discrete sensors are selected for their phenomenology and specific detection features, such as detection fields, size, shape, and parameter." It is clearly inferable from this teaching in the original Specification and various Drawings that the discrete sensors selected for each sensor node may be volumetric or non-volumetric, depending upon the size, shape, and parameter of the detection field.

"The discrete volumetric sensors each have an associated volumetric intrusion detection field extending therefrom and are constructed and arranged to generate a response to an intruder entering its detection field."

Paragraph [0048] supports the entry of the "discrete volumetric sensors each have an associated volumetric intrusion detection field extending therefrom" in that it discusses: "the sensor array 5 detection zone 65 is used to close the triangular gaps above and below the detection zone 70 of the sensors 55 to the ground 60, which results at and near the sensor heads of the commercially available security sensors 55 where their detection fields are most narrow. This combination provides a continuous detection zone that is difficult to penetrate without being detected...". The discussion related to the detection field being "constructed and arranged to generate a response to an intruder entering its detection field" is originally provided at paragraph [00035]: "As an intruder (not shown) approaches a detection zone...the discrete sensors...detect the presence of the intruder and generate a response to the presence of an intruder in the detection zone."

"Each sensor node situated and spaced along a deformable cable and"

Applicant submits that the basis for entry in the original Specification is that Figure 1 shows that each sensor node 10a, 10b,..., 10n, define a longitudinal direction of the deformable cable and Figure 3 illustrates that the longitudinal direction of the deformable cable as stated at paragraph [0050], which reads a "sensor array 5 may be encased within and spaced along a deformable cable".

"has a volumetric detection zone defined by the detection fields of its constituent sensors as constructed and arranged in each sensor node."

Figure 3 and corresponding text in paragraph [0046] teaches that "sensor array may include four sensor nodes that are spaced apart to obtain an array length of 3 m". Thus teaching supports the entry of the "detection zone defined by the detection fields of its constituent sensors as constructed and arranged in each sensor node". Therefore, there is support in the original Specification for the above previously made amendment.

"The volumetric detection zone extends transversely to the longitudinal direction of the deformable cable at the sensor node."

Applicant submits that the basis for entry in the original Specification is that paragraph [0035] provides clear support by discussing: "each sensor node 10a, 10b, . . . , 10n has a corresponding detection zone 65a, 65b, 65c, shown in FIG. 2. Each detection zone 65a, 65b, 65c extends transversely to the longitudinal direction of the deformable cable at each sensor node 10a, 10b, . . . , 10n".

"The array processor is coupled to each node processor for generating information based on processing of the response generated from the detection zone of each sensor node."

Paragraph [0033] discusses: "The sensor nodes 10a, 10b . . . , 10n are each connected to an array processor 30". Paragraph [0037] discusses: "the node processor 25a, 25b, . . . , 25n transmits the signature, along with other sensor data, such as the address of the sensor node, to the array processor 30." It follows that the node processors are each coupled to the array processor for generating information.

Therefore, there is support for entry of the previously made amendments to paragraph [0011].

At paragraph [0032], Applicant previously amended the paragraph to more clearly define the present invention to provide support for the Claims and the statements of invention presented in paragraphs [0018] through [0020].

Applicant submits that support for the previously amended text "(where the detection zone is defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node)" can be found in paragraph [0036] which clearly teaches "each of the detection zones 65a, 65b, 65c are comprised of one or more detection fields (not shown). Accordingly, the detection zone 65a has a subset of detection fields (not shown) for each discrete sensor 100a, 101a, . . .".

Applicant also previously amended the range in paragraph [0032] related to the spacing between sensor nodes to expand the range by 0.25 meters. The range provided in the originally filed subject application relates to a preferred embodiment. Therefore, the expansion of the range does not constitute the introduction of new matter as it would be obvious to the skilled artisan that an expanded range can be inferred from the teachings of the present invention.

Therefore, there is support for the entry of the previously made amendments to paragraph [0032].

Applicant also previously amended paragraph [0043] to read: "For the purposes of this document, discrete sensors are classified as either being volumetric sensors or non-volumetric sensors. Volumetric sensors are defined as each having an associated volumetric detection field. This is in contrast to non-volumetric sensors which are defined as having linear or planar detection fields, such as touch or contact sensors." Clear support for introducing the definitions of both volumetric sensors and non-

volumetric sensors is provided in Figure 6, which shows a trough-shaped detection zone 65 above the sensor node, such that the presence of an object that passes through the detection zone 65 is detected, as detailed in corresponding paragraph [0050]. The detection zone 65 is not two-dimensional but rather is three-dimensional and thus volumetric in shape.

Original paragraph [0043] also discusses "discrete sensors are selected for their phenomenology and specific detection features, such as detection fields, **size**, **shape**, and **parameter**." It would be clear to the skilled artisan that sensors can have detection fields which are volumetric or non-volumetric depending on the detection field's **size**, **shape**, and **parameter**.

Paragraph [0044] further discusses "discrete sensors may also be selected or their fields oriented for compatibility, for example non-interference of microwave sensors", which lends support to the definition of volumetric sensors as having associated volumetric detection fields.

Thus, Applicant submits that the entry of the definitions of volumetric and non-volumetric sensors in paragraph [0043] are supported by the original Specification and Drawings.

Applicant also amended the Specification at paragraphs [0018], [0019], and [0020] to conform to the amended independent Claims 1, 15, and 18 as statements of invention respectively. In light of the previous remarks, Applicant submits that the original Specification provides clear support for the Claims and corresponding statements of invention at paragraphs [0018], [0019], and [0020]. Therefore, Applicant respectfully submits that the amendments filed on April 4, 2005, and March 24, 2005 be respectively entered.

Applicant has also previously amended dependent Claims 5 through 7 and 26 to provide proper antecedent basis for various terms introduced in the Claims and to correct

typographical errors. Claim 18 has also been previously amended to correct an inconsistency in the terminology used. The original Specification provides support for the term "system controller," and thus Claim 18 has been previously amended to refer to "a system controller" rather than "a system processor".

Rejections of Claims 1, 4, 5, 9, 10, 12 through 15, 17 and 21, 22 under 35 USC 103

The Examiner objects to Claims 1, 4, 5, 9, 10, 12 through 15, 17 and 21, 22 under 35 U.S.C. 103(a) as being unpatentable over Akers, U.S.PN. 3,789,384, in view of Hunt et al., U.S.P.N. 5,239,459.

The Examiner states:

"Akers discloses an intrusion detection system sensor array comprising a first plurality of sensors a1-a3 at a first node and a second plurality of sensors c1-c3 at a second node, and means for providing an alert responsive to the sensors (Fig. 9, abstract), except for specifically stating that the sensor output includes a processor to process the received signals to generate an output."

"Hunt discloses an intrusion detection system with plural sensors (Fig. 2) including processing means 26 and 22 for processing the received intrusion signals in order that an output can be displayed on display 42."

"It would have been obvious to one of ordinary skill in the art to use processing means as suggested by Hunt in conjunction with a system as disclosed by Akers, in order that several sensor locations could have been quickly and accurately monitored from a central location."

"Regarding claim 4, Akers teaches use of IR sensors (abstract)."

"Regarding claim 5, Akers discloses use of central distribution point 25 to sensors (Fig. 1)."

"Regarding claims 9-10, Akers teaches having sensor volumes slightly overlap. Choosing to have sensors abut instead would have been obvious, in order that it could have been determined exactly which volume segment an intruder was in."

> "Regarding claims 12 –14, 21-22, sensor volumes in Akers are distributed so as to provide adequate coverage over a given area (col. 11, lines 19-23)."

Applicant has previously amended Claims 1 and 15 to more clearly define the present invention. The Examiner's attention is drawn to the body of Claims 1 and 15 respectively which now include "a deformable cable" comprised in the sensor array and the system respectively. Claims 1 and 15 also provide:

> "a plurality of sensor nodes situated and spaced along the deformable cable, each sensor node having at least one discrete volumetric sensor having a detection field and at least one of the sensor nodes having at least two discrete volumetric sensors, each sensor node having a volumetric detection zone defined by the detection fields of its constituent sensors as constructed and arranged in each sensor node, the volumetric detection zone extending transversely to the longitudinal direction of the deformable cable at the sensor node"

Support for previous amendments made to independent Claims 1 and 15 are found in the Specification as originally filed and previously amended, the subject matter of which is supported by paragraph [0011], and thus Applicant incorporates herein remarks presented above in respect of the objections to the amended Specification at paragraph [0011].

Applicant respectively submits that both independent Claims 1 and 15 are patentable over the Akers patent in view of the Hunt et al. patent. Claims 1 and 15 both provide for "a plurality of sensor nodes situated and spaced along the deformable cable". The Akers patent does not teach nor fairly suggest the provision of a plurality of sensor nodes nor the provision of a deformable cable. Nor does the Hunt et al. disclose a sensor array having "sensor nodes situated and spaced along the deformable cable". Thus, the Claims of the present invention are patentably distinguished from Akers and Hunt et al.

Moreover, while the Examiner asserts that in Akers, Figure 9 and the Abstract provide a series of intrusion detection sensors corresponding to sensor clusters which

provide areas of protection, the Examiner acknowledges that the Akers patent does not provide an array processor as in independent Claims 1 and 15 of the present invention.

The Akers patent teaches an intrusion detection system sensor array comprising a plurality of sensors located at various nodes. However, Applicant submits that there is no disclosure in the Akers patent of a plurality of nodes with a detection zone defined by the detection fields of its constituent sensors as in the present invention.

The Akers patent teaches that sensor clusters a, b, c, and d are chosen not for a continuous field but rather for a particular function, or for instance, because they are optical such as the a's and b's being coaxially focused cones to avoid false alarms by a specific timing between them, the c's are for fire and point elsewhere, and the d's are for lockout.

It is also important to note that the sensor arrangement taught by Akers could not be used for a wall-top, roof edge or any continuous detection application, other than perhaps for a circle, or as a volumetric interior sensor, where the sensors are all together.

While the Examiner contends that the Hunt et al. patent in combination with the Akers patent discloses an intrusion detection system with plural sensors that includes "processing means 26 and 22", Applicant submits that the Hunt et al. patent describes a complex processing system for physical security systems but does not teach a sensor array as in the present invention. Moreover, the Hunt et al. patent describes various types of sensors, such as microwave sensors and ported coax sensors, which are operatively coupled to an ASP unit. However, that is the extent of the relevant teaching in the Hunt et al. patent as the teachings are directed toward the "intelligent" enhancement of a conventional security system, which involves a learning mode to create an adaptive learning network, or neural net, for monitoring weather, false and real alarms over a set period of time, and a system operator to decide what result is caused by what event to

adapt the system to current conditions. The teachings of the Hunt et al. patent are clearly directed away from the present invention as taught and provided in Claims 1 and 15.

Therefore, Akers and Hunt et al. does not teach nor fairly suggest the teachings of the present invention as provided in Claims 1 and 15, either taken alone or in any combination, and therefore do not affect the patentability of Claims 1 and 15.

With respect to the rejection of dependent Claims 4, 5, 9, 10, 12, 13, 14, 21, and 22, Applicant submits that these Claims are patentable as they depend from patentable base Claims 1 and 15 as now amended respectively.

Rejection of Claim 6 though 8 under 35 USC 103

The Examiner objects to Claim 10 under 35 U.S.C. 103(a) as being unpatentable over Akers, in view of Hunt et al. and Frederick, U.S.P.N. 4,209,779.

The Examiner states:

> "Frederick teaches desirability of placing sensors for an intrusion detection system in a deformable cable 18. Choosing to encase the node into the flexible cable would have been obvious, in order to allow the cable to be rolled more easily to aid installation, the specific size of the sensor node not affecting its function."
>
> "It would have been obvious to use a flexible cable for sensors in a system as disclosed by Akers and Hunt in order to allow for ease of installation of the sensor system."

With respect to the Akers patent and the Hunt et al. patent in combination, Applicant incorporates the remarks presented above, in respect of the patentability of Claim 1 in overcoming the current rejection under 35 USC 103.

With respect to the Frederick patent being applied in combination with the Akers patent and the Hunt et al. patent, Frederick does not teach the use of a deformable cable. Rather, Frederick teaches fence surveillance systems which include a "relatively rigid electrical conduit" coupled by suitable coupling devices and junction boxes having both an ultrasonic sensor and a vibration sensor.

Frederick provides a relatively rigid conduit through which signals are returned to the vibration sensor. If the conduit was not "relatively rigid" as taught by Frederick at column 3, line 9, the acoustic signal returned would be attenuated and possibly lost. Therefore, Frederick in fact teaches away from the provision of a deformable cable as in the present invention.

Moreover, Frederick clearly teaches in column 6, lines 10 to 17, that the ultrasonic disturbance and the fence vibration are both needed to cause an alarm. The vibration sensor taught by Frederick is thus not a discrete volumetric sensor as defined in the present invention.

Furthermore, Frederick does not contemplate the use of at least one sensor node having with "at least two discrete volumetric sensors", either exclusively or in combination with non-volumetric sensors.

In sum, none of the cited prior art teachings provide for "sensor nodes situated and spaced along the deformable cable". Therefore, Applicant respectfully submits that Frederick does not teach nor fairly suggest, either taken alone or in any combination, a sensor array as in Claims 6 through 8 which include the limitations of patentable base Claim 1.

Rejections of Claims 18 through 20 and 23 under 35 USC 103

The Examiner objects to Claims 18 through 20 and 23 under 35 U.S.C. 103(a) as being unpatentable over Akers, in view of Hunt et al., and Osako et al., U.S.P.N. 6,717,515.

The Examiner states:

> "Osako discloses desirability of providing sensor sensitivity adjustment by calibration in an intrusion detection system (abstract)."
>
> "It would have been obvious to use calibration of sensors as suggested by Osako in conjunction with intrusion sensors as disclosed by Akers and Hunt, in order to allow adjustment of sensor sensitivity, in order to obtain accurate detection of intrusion for varying conditions."

Applicant respectfully submits that the Osako reference teaches communication means from a mobile console to an array of sensors. Applicant has amended Claim 18 to include similar limitations as in Claims 1 and 15, in that at least one sensor array has "sensor nodes situated and spaced along the deformable cable". Osako clearly does not teach nor fairly suggest the subject matter of Claim 18.

There is also no indication that the Osako teachings relate to intrusion detection systems, or the nature of the sensors' detection pattern, e.g. overlapping, contiguous, etc., for any particular function. Accordingly, there is no motivation to combine the Osako reference with the other cited prior art references, Akers and Hunt et al. Moreover, none of the cited prior art references taken alone or in any combination teach the subject matter of Claims 18 and 20. Therefore, Applicant respectfully submits that Claims as amended are allowable in their current form.

Rejection of Claim 24 though 26 under 35 USC 103

The Examiner objects to Claims 24 through 26 under 35 U.S.C. 103(a) as being unpatentable over Akers, in view of Hunt et al., or Akers in view of Hunt et al. and Osaka et al., either further in view Harden et al. , U.S.P.N. 4,209,779.

The Examiner states:

> "Harden teaches desirability of utilizing non-volume intrusion sensors in conjunction with volume intrusion sensors such as ultrasonic or light sensors (col.5, lines 48-60)."
>
> "It would have been obvious to use non-volume sensors along with volume sensors in a system as set forth by Akers and further in view of Hunt or Hunt and Osako, in order that intruders could have been detected while attempting to gain entry to an unauthorized area."

Applicant respectfully submits that Claims 24 through 26 are patentable in that they depend from patentable base Claims 1, 15, and 18, respectively. Therefore, in view of the above remarks in relation to the rejection of the base Claims 1, 15, and 18, Applicant has overcome this final rejection.

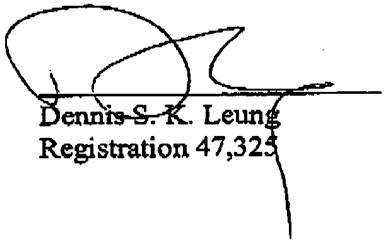
In sum, the Applicant submits that all of the Claims in the subject application include patentable subject matter and that none of the references either taken alone or in any combination teach the limitation of "a plurality of sensor nodes each having at least one discrete volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node" as provided in independent Claims 1, and 15, and similarly in Claim 18.

Conclusion

Applicant respectfully submits that the outstanding rejections under 35 USC 103 have been overcome by the previous amendment provided in the Office Action response of July 11, 2005. Applicant has made an effort to more clearly define the invention in the previous amendment and believes that no new matter has been entered in previous amendments. Applicant respectfully submits that all of the claims presently standing in the application are patentably distinguished from the teachings of all references of record either taken alone or in any combination. Accordingly, reconsideration and allowance of this application is respectfully solicited.

The Commissioner is hereby authorized to debit any underpayment or credit any overpayment to the USPTO deposit account no. 16-0600 should any additional fees be necessary.

Respectfully submitted



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